

# Mappls Utility Platform User Guide

Utility management and workflows on web, Android and iOS

## Purpose

This guide explains the utility work that teams need to organise and how Mappls Utility Platform supports that work. It covers power, water, gas, telecom, wastewater, stormwater and district heating.

Use it to establish a shared vocabulary, assign responsibility, prepare a pilot and carry out the software workflows. Each walkthrough identifies its objective, inputs, actions, evidence and handover.

## Who should use it

Utility owners and operations managers, network engineers, field teams, GIS data stewards and people reviewing service performance. The software uses four roles: administrator, engineer, field and viewer.

## Working boundary

The platform supports asset records, connectivity, engineering screening, reviews and field evidence. Your organisation's approved SOPs, competent-person requirements, emergency instructions and statutory permissions govern physical work. A software approval does not replace them.

The demonstration district contains synthetic assets and examples. Treat every DEMO record as training material. Replace and validate the network baseline before operational use.

## Edition

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MapmyIndia / Mappls

Companion resources: the product website at /about, this guide at /guide, the marketing presentation and product datasheet.

# How to use this guide

Read the operating context first, then follow the module walkthrough that matches your task.

## Reading map

| Your task                             | Start with  |
|---------------------------------------|-------------|
| Set objectives and responsibilities   | Pages 3–6   |
| Learn the workspace and register      | Pages 7–8   |
| Review engineering or a utility model | Pages 9–14  |
| Investigate or plan a change          | Pages 15–16 |
| Capture and review field evidence     | Pages 17–22 |
| Review excavation or exchange data    | Pages 23–24 |
| Run a pilot and troubleshoot          | Pages 25–26 |

## A repeatable work pattern

Begin with an identified asset and the current network revision. Review the selected module's inline objective and role-specific instructions. Check the inputs, run the analysis or record the work, then inspect the result and its assumptions. Export or save the evidence when the next owner needs it.

Read-only previews can help you explore an issue. A preview does not create an incident, allocate fibre, approve a design or commission construction. Use the explicit save, reserve or transition control when the agreed workflow calls for a recorded action.

## Training examples

Start with the demonstration assets and labelled work records. Practise a water trace, a power failure impact, a fibre route preview, a draft extension and a field inspection. Keep the demonstration environment separate from accepted operational records.

# Utility management objectives

The operating model should connect service outcomes to a reliable network record and an accountable work process.

## Objectives and evidence

| Objective               | Typical work                                     | Evidence                                             |
|-------------------------|--------------------------------------------------|------------------------------------------------------|
| Know the network        | Survey, identify and reconcile assets            | Verified IDs, position, class, units and connections |
| Plan service capacity   | Review demand, condition and alternatives        | Engineering assumptions and reviewed proposal        |
| Maintain continuity     | Monitor observations and investigate disruptions | Incident impact and response ownership               |
| Care for equipment      | Assign preventive or corrective maintenance      | Checklist, inspection and completion notes           |
| Control changes         | Review, accept and commission construction       | Versioned design and as-built reconciliation         |
| Coordinate shared space | Review other utilities near planned work         | Corridor findings and separate owner clearances      |

## Measures worth agreeing

Useful pilot measures include missing or duplicate asset IDs, invalid connections, overdue work, unsynchronized inspections, unresolved review flags and time spent awaiting a named reviewer. Agree the definition, data source and review interval before treating a count as a performance measure.

The district screen reports assets, connections and workflow status. It does not calculate every regulatory service-performance measure. For example, SAIDI/SAIFI, billed leakage and customer SLA compliance need additional event, customer and period data.

## Planning versus operation

Planning explores future demand and proposed construction. Monitoring interprets recorded observations and condition. Operations coordinates the response and work handovers. The accepted asset registry links these activities, but each retains its own evidence and authority.

# Definitions used in the platform

Use consistent terms so GIS records, engineering reviews and work orders refer to the same thing.

## Core terms

| Term                  | Meaning in this product                                                                                               |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| Asset                 | An equipment record with an ID, utility, class, WGS84 position, lifecycle and attributes.                             |
| Segment or connection | A physical link between same-utility equipment, with type, direction and engineering attributes.                      |
| Topology              | Recorded relationships between assets. A nearby point is not connected unless a segment establishes the relationship. |
| Source or outfall     | The origin of supply or the receiving endpoint of a collection network.                                               |
| Trace                 | A traversal of operating connectivity under selected rules, control states and barriers.                              |
| Dependency            | A separate cross-utility relationship stating that equipment requires another provider.                               |
| Network revision      | A version used to detect stale analysis, edits and approvals.                                                         |
| Lifecycle             | Proposed, under construction, existing or retired equipment state.                                                    |
| Incident              | A recorded service-impact assessment with review and resolution history.                                              |
| Work order            | Assigned work with asset, crew, due date, priority and checklist.                                                     |
| Observation           | A time-stamped instrument or field reading with explicit units.                                                       |
| Screening             | A simplified engineering check that identifies items for professional review.                                         |

## Counts and quantities

Service connections are recorded per utility. Their sum is not a count of unique households. A segment length comes from its recorded endpoints in this release; it is not automatically the surveyed installed cable or pipe length.

# Roles and responsibility

The software role determines available actions. The utility owner separately assigns professional and operational authority.

## Software roles

| Role          | Principal responsibility                                                                    | Typical handover                               |
|---------------|---------------------------------------------------------------------------------------------|------------------------------------------------|
| Administrator | Review governance, approval and commissioning; audit access; private enquiry follow-up      | Recorded decision and acceptance basis         |
| Engineer      | Verified registry edits, analysis, proposals, fibre allocation, work assignment and imports | Assessment or proposal ready for review        |
| Field         | Assigned work progression, inspections and measurements                                     | Synchronized evidence and checklist completion |
| Viewer        | Read, analyse and export available evidence                                                 | Operational report or question to an owner     |

## Separation of duties

An engineer prepares a design; an administrator approves and commissions it. A field engineer captures condition evidence; the engineer reconciles network corrections. A viewer can explore a fibre route but cannot reserve or release capacity. Server permission checks enforce these distinctions.

Current access uses role credentials, rather than individual enterprise identities. The audit actor therefore represents the role. A real operating rollout should add named-user identity and per-user accountability before relying on the audit for individual attribution.

## Assigning ownership

For each operating area, name a network data owner, engineering reviewer, field supervisor and incident coordinator. Record who can accept as-built changes, who resolves data conflicts and who authorises physical work outside the software. Agree an escalation path for incomplete or contradictory evidence.

# SOP structure and work handovers

Use the platform to record the steps and evidence of a reviewed process. The organisation owns the approved procedure.

## Suggested SOP record

| Element                 | What to define                                                               |
|-------------------------|------------------------------------------------------------------------------|
| Purpose and trigger     | The service objective and the event that starts the procedure                |
| Scope and prerequisites | Operating area, equipment classes, verified data and required permissions    |
| Responsible roles       | Preparer, reviewer, field executor and decision owner                        |
| Inputs                  | Asset IDs, current revision, drawings, readings and accepted survey          |
| Work steps              | Software actions and separately authorised physical work                     |
| Acceptance evidence     | Required checklist, notes, measurements and attachments                      |
| Exceptions              | Missing source, stale revision, conflicting evidence or abnormal observation |
| Closure                 | Who accepts the result and updates the baseline                              |

## A complete handover

1. Identify the asset or segment, utility and network revision. State the observed problem or requested change in plain language.
2. Attach the relevant trace, incident, proposal, reading or inspection ID. Include assumptions and missing information.
3. Name the next owner and the decision required. The software Next link helps navigation; it does not assign ownership or send a notification.
4. At completion, reconcile accepted changes with the asset register and retain the review basis.

## Escalation

Pause the affected decision when identifiers, physical state or model inputs are uncertain. Route it to the responsible engineer or incident authority. The application does not supply switching, purge, confined-space entry or excavation instructions.

# Getting started and daily navigation

Sign in at the workspace root. Public product information is available at /about and the browser guide at /guide.

## First session

1. Obtain the role credentials from the platform administrator. Do not share them in an enquiry, screenshot or exported report.
2. Select the utility filter. All utilities gives district context; engineering calculations remain specific to the selected domain.
3. Read Your job in this section. Expand How to complete this work for the role's steps, expected output and handover.
4. Use District overview to inspect counts, review flags and dependencies. Open the network or incident that needs investigation.
5. Check the synthetic-district label and DEMO titles. Opening analysis modules calculates a read-only example so you can see the workflow immediately.

## Navigation decisions

| Need                                      | Module                |
|-------------------------------------------|-----------------------|
| Locate equipment or verify connectivity   | Network explorer      |
| Explain supply or collection paths        | Engineering workbench |
| Understand an interruption                | Incidents & isolation |
| Allocate fibre capacity                   | Fibre provisioning    |
| Prepare construction and quantities       | Design & quantities   |
| Carry out assigned work                   | Field operations      |
| Record measurements                       | Observations          |
| Review nearby utilities                   | Excavation review     |
| Import, export, audit or review enquiries | Data & integrations   |

## Before sign-out

Synchronize pending inspections. The multi-utility console prevents sign-out with a pending inspection queue. Do not clear browser storage or change device while unsynchronized evidence remains.

# Asset register and data quality

Objective: establish the correct equipment record and accepted physical relationships before analysis.

## Required inputs

Use stable asset and segment identifiers, accepted WGS84 longitude/latitude, equipment class, utility, zone, lifecycle and domain attributes. Retain the survey source, date and owner in your organisation's data process. A connection must reference valid same-utility endpoints.

## Workspace procedure

1. Open Network explorer and select the utility. Search by asset ID, name or zone. Select a row or map marker and inspect Asset details.
2. Compare class, coordinates, lifecycle, units and revision with the accepted source. Use Address for Mappls context and Navigate for a coordinate directions link.
3. As engineer or administrator, use + Asset or + Connection for a verified addition. Inspect the asset register and segment records after saving.
4. Run Trace from the selected equipment. Confirm the intended source or outfall and inspect direction, barriers and recorded control state.
5. Export the asset register or network where required for reconciliation. Hand unresolved discrepancies to the data owner.

## Acceptance and exceptions

Accept the record when its identifier, position, equipment type and connections agree with evidence. Incompatible voltage/phase or class combinations require correction before saving. Proposed, retired and under-construction equipment are excluded from operating connectivity.

The map provides geographic context. It does not prove surveyed position accuracy or underground clearance. A stale-version error means another change occurred: reopen the record and review it before resubmitting.

# Engineering workbench

Objective: explain connectivity and identify inputs or conditions requiring engineering review.

## Trace procedure

1. Select a utility and open Engineering workbench. The initial source/outfall preview uses an example or the selected equipment.
2. Choose Start equipment and Mode. Add asset barriers or a phase filter only when they represent the assessment you intend.
3. Select Run trace. Inspect reached assets, service connections, path length and whether a source or outfall was reached.
4. Use the analysis map and asset table together. Export the trace or screening results for the reviewer.
5. Review every screening row with its units, assumptions and limit. Record which input or field check must resolve a flag.

## Domain traversal

| Network                   | Operating connectivity rule                                                    |
|---------------------------|--------------------------------------------------------------------------------|
| Power                     | Directed electrical connections; open controls interrupt supply                |
| Water and gas             | Physical connectivity in both directions; closed fluid controls stop traversal |
| Telecom                   | Physical route connectivity plus capacity rules for provisioning               |
| Wastewater and stormwater | Directed collection toward receiving works or outfalls                         |
| District heating          | Recorded physical network; closed controls interrupt connectivity              |

## Interpretation

A reachable source is a connectivity result. It does not guarantee operating pressure, voltage quality, sufficient storage or a safe physical state. Source-path search uses recorded segment lengths, and alternative-path search is bounded.

If no source appears, review the network baseline, missing links, lifecycle and control state. Keep the failed result and investigation context rather than changing inputs just to obtain a successful trace.

# Power engineering workflow

Objective: maintain an electrically consistent register and review the equipment and services affected by a failure or extension.

## Inputs and outputs

| Input                                      | Use                                                |
|--------------------------------------------|----------------------------------------------------|
| Voltage in kV and conductor phases         | Validate compatible electrical endpoints and links |
| Connected load in kW                       | Estimate downstream load and current               |
| Nameplate capacity in kVA and power factor | Screen transformer loading                         |
| Switch state and lifecycle                 | Determine recorded operating connectivity          |

## Worked example

1. Select Power and trace PWR-C-11 to its source. Inspect the equipment path and phase compatibility.
2. Review transformer and conductor screening rows. Verify whether connected load is a measured demand or a planning value before interpreting loading.
3. Open Incidents & isolation and assess PWR-DT-003. Inspect the affected power assets and any recorded telecom or gas dependencies.
4. Save an incident when an investigation needs ownership. Assign evidence collection through Field operations and retain review notes.

## Engineering interpretation

Three-phase current screening uses connected kW, voltage and power factor. Transformer loading compares estimated kVA against nameplate capacity. Diversity, phase unbalance, voltage drop, short-circuit level and protection coordination are outside this calculation.

Cross-utility loss propagates only through explicit required dependencies. The model does not infer a battery, generator or alternative supply.

## Handover

Provide the equipment ID, network revision, load assumptions and the flagged result. Electrical switching, isolation and restoration remain with the authorised operating team under its approved procedure. The software does not actuate equipment.

# Water and gas workflows

These utilities share connectivity and valve review patterns, but their engineering quantities and operating context differ.

## Utility-specific evidence

| Water                                             | Gas                                            |
|---------------------------------------------------|------------------------------------------------|
| DMA, reservoir, pump and valve identifiers        | City gate, regulator, valve and CP identifiers |
| Design flow L/s, diameter mm and roughness        | Pressure bar(g) and recorded MAOP              |
| Pressure head m and period volumes m <sup>3</sup> | Leak concentration ppm and CP potential mV     |
| Velocity and Hazen–Williams head loss             | Pressure versus MAOP and observed leak review  |

## Water example

1. Trace W-C23 and review its recorded source path. Examine alternative ring supply when assessing a failed segment or closed control.
2. Review pipe velocity and head-loss screening with the entered design flow. The screen does not solve a full hydraulic ring or pump operating point.
3. Use Water balance for one named DMA and period. Enter system input, billed volume and unbilled authorised consumption in consistent units. Review non-revenue water and calculated water loss separately.

## Gas example

1. Inspect G-STATION and its pressure context. Review a failure or proposed control closure for connectivity impact.
2. Record an actual reading in Observations. Positive leak concentration and pressure above recorded MAOP generate review flags.
3. Route abnormal observations through the approved gas response procedure and record the assigned follow-up evidence.

## Limits and handover

Water calculations do not infer leakage, water quality, storage or transients. Gas screening does not solve compressible flow, dispersion or CP compliance. Neither connectivity isolation result proves physical isolation. Hand the asset, units, timestamp and evidence to the utility engineer.

# Telecom fibre provisioning

Objective: identify a feasible service path and allocate available capacity with an explicit optical budget.

## Inputs

Confirm the source POP/OLT, service endpoint, fibre/core counts, active reservations, port capacities, cable attenuation, splice loss, insertion losses and shared-risk groups. Enter the optical budget in dB.

## Provisioning procedure

1. Open Fibre provisioning. The automatic example is a preview and does not reserve a circuit.
2. Enter the service name, source, endpoint and optical budget. Choose Single route or the available protected-route requirement.
3. Select Find feasible route. Review route length, continuous core number, modelled loss and optical margin. Inspect the route on the map.
4. An engineer or administrator selects Reserve circuit after review. Confirm the circuit in Service circuits and pass endpoint/core details to the field team.
5. Use Release only when service withdrawal is confirmed. The allocation becomes available again after release.

## Why a route can fail

A continuous free strand must exist on every segment of a route. Endpoint ports must be available and the optical budget sufficient. Protected service requires a second route with no shared link and no matching nonempty shared-risk group. The demonstration network shares an uplink, so a protected request may correctly fail.

## Evidence and limits

Export or retain the circuit identifier, endpoints, core, route, loss inputs and review basis. The model includes an explicit endpoint connector allowance. It does not perform arbitrary splice-port remapping, wavelength assignment or measured OTDR interpretation. A feasible route still needs field acceptance.

# Wastewater and stormwater workflows

Objective: follow directed collection paths and identify geometry or demand that warrants drainage-engineer review.

## Required inputs

| Wastewater                      | Stormwater                             |
|---------------------------------|----------------------------------------|
| Inlet design flow in L/s        | Catchment area in hectares             |
| Upstream and downstream inverts | Rainfall intensity in mm/h             |
| Diameter, roughness and length  | Runoff coefficient and receiving drain |
| Receiving treatment works       | Outfall and downstream conditions      |

## Collection review

1. Select Wastewater or Stormwater. Trace a collection inlet such as S-IN11 or D-IN11 toward its receiving works or outfall.
2. Verify direction and invert levels. Investigate non-falling segments and missing receiving connections before trusting capacity screening.
3. Review accumulated demand and full-pipe Manning capacity. Check the entered geometry and roughness rather than accepting a flag as proof of flooding.
4. For stormwater, confirm rainfall duration/context, catchment area and runoff coefficient outside the screen. The rational-method result is a design-condition estimate.
5. Assign chamber, blockage or survey inspection through Field operations and reconcile verified findings into the registry.

## Interpretation and output

The model accumulates upstream contributions without repeatedly counting the same asset through graph traversal. It uses circular full-flow capacity and a recorded equivalent diameter for relevant entries.

There is no backwater, surcharge, hydrograph routing, infiltration, surface flood or tailwater solver. Retain the trace, the input conditions and the flagged segment IDs for the drainage engineer. Inspection evidence should distinguish a recorded obstruction from a modelled capacity concern.

# District heating workflow

Objective: relate connected thermal demand to recorded supply/return temperatures and pipe-loss assumptions.

## Engineering inputs

| Quantity                       | Unit and use                                             |
|--------------------------------|----------------------------------------------------------|
| Thermal demand                 | kW; input to mass-flow screening                         |
| Supply and return temperatures | °C; temperature difference for heating-water calculation |
| Pipe loss rate                 | W/m; multiplied by recorded length                       |
| Valves and dependencies        | Recorded connectivity and essential providers            |

## Review procedure

1. Select District heating and trace H-C23 to the recorded source. Verify that the registry represents the intended circuit.
2. Check supply/return temperatures and demand units before reviewing mass flow. Review segment heat losses against the recorded loss rate.
3. Inspect the heating plant or circulation pump dependencies. Use Incidents & isolation to understand connectivity loss after a failure.
4. Record actual temperature or energy observations and assign insulation, leakage or access inspections through Field operations.
5. Hand the demand, temperatures, asset revision and measured evidence to the heating engineer before changing design assumptions.

## Model boundary

The calculation assumes heating water and a constant specific heat of 4.186 kJ/(kg·K). It does not correct for glycol, solve coupled pressure/thermal networks or model transient cooling and plant dispatch.

The demonstration is a simplified supply network. A real operator must explicitly represent its supply and return equipment and connections. Do not infer a complete return circuit from a displayed source path.

## Completion evidence

Retain reviewed values and units, the trace output, pipe-loss concerns and synchronized field observations. Any physical adjustment of plant or valves follows the organisation's approved operating authority.

# Incidents and service impact

Objective: assess a recorded failure, identify affected services and prepare a documented response handover.

## Assessment and record

1. Select the failed equipment or segment in Incidents & isolation. Add other failures or candidate controls only when they belong to the scenario.
2. Select Failure impact or the isolation analysis and Assess network. Review baseline-unserved equipment, newly affected assets, critical services and cascading dependencies.
3. Inspect the result map and tables. Check whether alternate recorded supply remains and whether the proposed control set establishes connectivity isolation.
4. Record the incident with the assessment and review basis. Progress from Reported to Assessed and hand it to an administrator for approval.
5. After the separate authorised response, record resolution evidence. Complete the Resolved and Closed stages with the required role and notes.

## Revision-aware decisions

The assessment belongs to a specific network revision. If the registry changes, reassess before approval. A stale result should not be used as if it describes the current network.

Candidate isolation controls are advisory connectivity boundaries. The algorithm does not claim a minimum cut or provide a physical switching/valve sequence. Required dependencies assume no unrecorded backup autonomy.

## Handover contents

Include incident ID, failed assets, current revision, affected utility connections, critical assets, known alternate paths and the decision owner. Keep service counts per utility; a premises served by two utilities can appear in both totals.

## Exception path

Escalate incomplete topology, unknown equipment state or unverified critical-customer information before relying on the impact estimate. Use a work order to collect evidence and retain the uncertainty in the review notes.

# Design and quantities

Objective: review a proposed network extension separately from existing operating equipment and accept it through a controlled workflow.

## Design workflow

1. Open Design & quantities and inspect a DEMO draft using Review design & BOM. Use + Design proposal for a new extension or Revise draft for accepted corrections.
2. Provide typed proposed assets, segment endpoints and domain attributes. Validate connectivity and lifecycle. Enter unit rates in INR for the materials being estimated.
3. Review the BOM: asset counts, segment lengths, units and entered rates. Export the quantities for the estimator or reviewer.
4. Submit the proposal for administrator review. The administrator checks the design version and network revision before approval.
5. Commission only after organisational acceptance and required evidence. The application creates the reviewed assets and links in one transaction. Verify the result in Network explorer.

## Quantity interpretation

Segment quantities use endpoint lengths in the current release. Entered rates are not supplier quotes. Accessories, route survey, sag, fittings, wastage, labour, taxes and construction tolerances require separate estimation. DEMO rates are illustrative.

## Exceptions and evidence

Network changes invalidate pending approval or commissioning until the proposal is reviewed against the new baseline. Stale versions and duplicate identifiers must be resolved explicitly.

Keep the design ID, revision, proposed equipment, BOM export, review comments and acceptance basis. Physical construction and site clearance follow the owner's approved process. A draft or software submission is not permission to build.

# Web field operations and offline capture

Objective: complete assigned work with evidence attributable to a known equipment revision. This chapter covers browser capture. The following native mobile chapters cover Android and iOS.

## Field procedure

1. Open Assigned work, confirm the asset, crew, priority and due date, and select Start work. Review the utility-specific checklist and approved scope.
2. While online, select Prepare field pack. This stores an asset snapshot for offline inspection capture on the current browser/device.
3. Select the equipment, record condition and meaningful notes, and attach authorised GPS or a photo when available. Photo evidence is limited to 1 MB per capture.
4. Select Save to device queue. A queued record has not yet reached the server. Keep the device and browser data intact.
5. Reconnect, authenticate and select Sync inspections. Review each conflict against the current asset revision and resubmit only after deliberate reconciliation.
6. Complete every work checklist item and add completion notes. Confirm the inspection in history and the work order in its completed state.

## Evidence quality

Notes should describe what was observed, where, when and what needs follow-up. Record actual instrument readings in Observations with their units. Do not create fabricated GPS or photo evidence merely to complete a record.

## Continuity and storage

Offline support covers prepared records and inspection capture, not Mappls tiles. The browser store is not encrypted by this application. Use a managed device and follow your retention and device-loss procedures.

The console prevents sign-out when inspections remain pending. A synchronization success and empty outbox are the completion evidence; saving to the queue alone is insufficient.

# Native mobile experience and roles

Android and iOS field apps connect downloaded work and evidence to the same utility platform used in the office.

## Choose the right screen

| Work to do                      | Where to do it                                                                                 |
|---------------------------------|------------------------------------------------------------------------------------------------|
| Find equipment or assigned work | Native Work and Assets. Refresh the field pack while online.                                   |
| Inspect or measure equipment    | Native Assets. Capture condition, notes, GPS/photo evidence and utility measurements.          |
| Start or complete a checklist   | Native Work. Queue the transition, synchronize and confirm the work state.                     |
| Reconcile pending evidence      | Native Outbox. Check receipts and explicitly resolve changed-record conflicts.                 |
| Map, trace, assess or design    | Workspace inside the app. All ten modules use the online web interface and server permissions. |

## Field engineer

Confirm the equipment ID, assigned crew, job scope and approved site procedure. Record actual observations. Complete only checks that have been performed. Hand over the work ID, synchronized evidence and any unresolved condition.

## Engineer and administrator

Engineers review incoming evidence, investigate abnormal readings and prepare reviewed changes. Administrators oversee approval, exceptions and access. Both can use native field capture and the full online Workspace. Crew search helps locate jobs but does not restrict access in this shared-role pilot.

## Viewer

Viewers review downloaded records and online progress. They cannot save inspections, measurements or work transitions. Send discrepancies to the responsible engineer with the record ID.

## Availability

Release 0.5 is a native field pilot. Android requires Android 8 or later; iPhone and iPad require iOS 17 or later. Company signing, managed distribution and physical-device acceptance precede an operational rollout.

# Preparing a native field shift

Outcome: the crew carries the correct downloaded records and understands what can be completed without a connection.

## Preparation and work start

1. Obtain the pilot app through your administrator. Confirm the approved HTTPS server address and role credentials. Do not use an unverified cloud address.
2. Sign in and select Refresh field pack. Confirm its saved time and network revision. A pack is a snapshot and can become stale after office edits.
3. In Work, filter by utility and search by job ID or crew. Open the work order and confirm its asset, priority, due date, scope and checklist. Search does not prove that the job is assigned to you.
4. Review the approved site SOP, permits, equipment identity and response contacts outside the app. Software access does not authorize physical operations.
5. Queue Start work and open Outbox to synchronize. The next work transition becomes available after the previous transition reaches the server and the work pack refreshes.
6. During the shift, use Assets to inspect or measure equipment. If disconnected, save to the native encrypted queue. Online maps and calculations require a connection.

## Moving between native and online work

Work, Assets, Outbox and Settings use native screens. Workspace opens district overview, network explorer, engineering, incidents, fibre provisioning, design, field history, observations, excavation review and data/integrations. It uses the same server record and role permissions.

Return to the native screens for evidence capture. Browser and native queues are separate local stores; pending evidence does not automatically transfer between phones, browsers or computers. Refresh the office module after a successful mobile sync to review the accepted record.

## Local demonstration

For the Mac-hosted demonstration, Android emulator uses `http://10.0.2.2:8190` and iOS Simulator uses `http://localhost:8190`. Obtain credentials from the local administrator. Physical devices require a verified HTTPS deployment. A simulator build cannot be installed directly on an iPhone.

# Native inspections and utility measurements

Outcome: evidence identifies the asset revision, observed condition and the measurement context needed for an engineering review.

## Inspection capture

1. Open the correct asset from Assets or the work order. Compare the identifier and registered attributes with the equipment in the field.
2. Choose the observed condition and describe findings and required follow-up. A draft preserves notes, condition and photo; recapture GPS when returning to a saved draft.
3. Select Capture current GPS when location evidence is useful. Review the stated accuracy. If no fresh fix is available, explain the location evidence in notes. Device GPS is not a surveyed underground clearance.
4. Select Take evidence photo when permitted. The app re-encodes the photo and limits its size. Add useful findings in text so a photo is not the only explanation.
5. Save encrypted inspection. Open Outbox to verify the entry. Local save is not server acceptance.

## Measurement context by utility

| Utility    | Example record and engineering context                                     |
|------------|----------------------------------------------------------------------------|
| Power      | Voltage or load measurement at identified equipment and stated phase.      |
| Water      | Pressure, flow or volume with instrument and DMA context.                  |
| Gas        | Pressure, leak concentration or CP potential with site and test context.   |
| Telecom    | Optical loss measurement tied to the identified equipment or service test. |
| Wastewater | Flow or level observation with manhole, pump or collection context.        |
| Stormwater | Rainfall or flow observation with location and event context.              |
| Heating    | Temperature or energy observation with supply/return context.              |

## Measurement acceptance

Use Record measurement, select the metric and read its displayed unit and allowed range before entering a value. Include the instrument, method and relevant circumstances in the note. The range check is input validation, not an engineering compliance decision. Abnormal or hazardous conditions follow the approved response process immediately; synchronization is not an emergency notification.

# Synchronization conflicts and device handover

Outcome: every accepted record has a server receipt and unresolved evidence retains an accountable owner.

## Synchronization and completion

1. Reconnect, open Outbox and select Sync queued work. Review the result for each record. A connection interruption retains its identifier so retries do not duplicate an accepted business change.
2. If sign-in expires, renew it at the same server and role. Pending evidence remains local. Changing server or role is blocked while records are queued.
3. For an inspection conflict, refresh and compare the current asset with the captured revision. Only after review, confirm retry against the current revision. The original evidence and capture time remain associated with the inspection.
4. For other rejected records, inspect the current work order or observations in Workspace. Reconcile the authoritative result before deliberately discarding a queued entry.
5. Complete the work checklist and add handover evidence. Queue completion and synchronize. Confirm the server work state before treating the job as completed.
6. Resolve the queue before sign-out or device transfer. Confirmed sign-out clears downloaded records and drafts. Do not uninstall or erase the app while unsent evidence remains.

## Common exceptions

| Symptom                        | Action                                                                                                          |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Session expired                | Renew sign-in using the original server and role, then retry sync.                                              |
| Storage cannot save evidence   | Keep the current screen open and free device storage. Confirm an Outbox entry before leaving.                   |
| Location or camera unavailable | Check device permission and availability. Record the evidence gap rather than inventing coordinates or a photo. |
| Map unavailable                | Check connectivity and the licensed Mappls deployment origin. Native downloaded records remain available.       |
| Queue belongs to another role  | Resolve that queue using its original account context before switching.                                         |

## Device and offline limits

Native packs, drafts and queues are encrypted at rest. The pilot supports a queue of up to 100 records and foreground manual sync. There are no offline map tiles, push dispatch, background delivery or remote wipe. Offline records remain on the unlocked device until cleared; session expiry stops online access rather than erasing the pack.

# Observations and monitoring

Objective: give engineers time-stamped measurements tied to the correct asset and engineering unit.

## Measurement procedure

1. Select Observations and choose the equipment. The available measurement types follow its utility.
2. Check the displayed unit. Enter the actual value and observation time, with notes identifying instrument/context as appropriate.
3. Save the observation and review its entry in the register. A record labelled DEMO is synthetic training data.
4. Review exceptions with the responsible engineer. Assign an investigation or work order when an abnormal reading needs evidence or corrective work.
5. Compare later readings using a consistent asset, unit and observation basis. Export or compile the period evidence required by your operating process.

## Examples

| Utility             | Recorded measurement examples                       |
|---------------------|-----------------------------------------------------|
| Power               | Voltage and electrical observations                 |
| Water               | Pressure head, volume and chlorine concentration    |
| Gas                 | Pressure, leak concentration and CP potential       |
| Telecom             | Optical loss                                        |
| Collection networks | Flow, level or rainfall as available in the catalog |
| Heating             | Temperature and energy observations                 |

## Flags and limits

Positive gas leak concentration, gas pressure above recorded MAOP and water head below the asset threshold generate review flags. These are prompts for investigation, not an automatic clearance or control action.

The current observations are manually entered. A live telemetry feed, automatic instrument calibration, SCADA alarms and process control require separately configured integrations. Monitoring decisions should account for stale, missing or doubtful measurements.

# Excavation and shared corridors

Objective: identify utility records near planned work and prepare an internal review with known gaps and owner evidence.

## Review procedure

1. Open Excavation review. Enter the work title, start and end locations, search buffer in metres and proposed excavation depth.
2. Select Check corridor. The preview includes nearby equipment and segments across all seven utilities, irrespective of a single-utility work context.
3. Inspect the alignment and highlighted findings on the Mappls map. Review geodesic distance, recorded depth and nominal vertical difference for every relevant record.
4. An engineer saves the review with the survey and owner context. Progress the Draft review to Reviewed, then obtain administrator approval as applicable.
5. Retain the review ID, current network revision and separate statutory/site clearances. Close the record with the completion basis after the approved work process.

## Distance is not clearance

The buffer measures proximity to the recorded point or line. Nominal vertical difference is the absolute difference between excavation depth and recorded segment depth. It does not establish surveyed clearance at a crossing. Unknown depth requires field verification.

## Acceptance and exceptions

Reassess when the network revision changes. Do not interpret no findings as proof that no buried utility exists. Missing surveys, positional uncertainty and unrecorded infrastructure require the utility owner's locating and clearance process.

The software records an internal review; it does not issue a statutory permit or authorise excavation. Hand findings to the engineer and relevant utility owners with the alignment, buffer, depth assumptions and evidence gaps.

# Data exchange and administrator enquiries

Objective: keep imported data consistent and keep public enquiries separate from operational records.

## Network import and reconciliation

1. Export the current network or inventory and retain the source dataset/version. Prepare WGS84 GeoJSON with typed point assets and two-endpoint line segments.
2. Use Data & integrations to load the file or paste the FeatureCollection. Select Validate and correct all reported errors.
3. An engineer or administrator commits the reviewed batch. The import is atomic; a rejected batch should not leave a partial network.
4. Reconcile asset and segment counts, identifiers and domain units. Trace representative supply/collection paths and examine lifecycle/control states.
5. An administrator selects Verify audit chain. Keep the import evidence and investigate unexpected discrepancies.

## Interoperability boundary

The current multi-utility importer accepts exactly two vertices per line and validates endpoint coordinates against registered assets. Segment more complex geometries before import. A segment cannot directly join two utilities; model a required dependency separately.

## Marketing enquiries

1. The public /about form records the submitted name, work email, organisation, utility focus, message and consent time. It returns a reference rather than claiming an email was sent.
2. As administrator, open Data & integrations and Enquiries. Review the message, set New, Contacted, Qualified or Closed and record an internal follow-up note.
3. Only administrators can access the inbox. Apply the organisation's retention and deletion process and avoid putting customer records or credentials into marketing enquiries.

## Audit interpretation

The hash chain is tamper-evident. It is not immutable against a database administrator and the current actor is the signed-in role, not a verified named employee.

# Operating cadence and troubleshooting

Agree a review cadence with the utility owner. The following is a suggested work-management pattern, not a regulatory schedule.

## Suggested cadence

| When                        | Review and handover                                                                     |
|-----------------------------|-----------------------------------------------------------------------------------------|
| Start of shift              | Open incidents, critical services, assigned work and unsynchronized evidence            |
| During work                 | New observations, changed asset state, overdue tasks and review exceptions              |
| End of shift                | Incident handover, completed checklists, synchronized inspections and unresolved issues |
| Periodic engineering review | Data-quality gaps, capacity flags, proposed designs and accepted as-built changes       |
| Periodic administration     | Access, audit integrity, backups, restore evidence and enquiry retention                |

## Troubleshooting

| Symptom                   | Action                                                                                                                            |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Map blank or interrupted  | Use Reload map connection. Check internet, licensed Mappls key and allowed deployment domain. Asset records can remain available. |
| No source reached         | Review missing links, direction, lifecycle, control state and selected barriers.                                                  |
| Stale version or revision | Reopen the record, inspect changes and repeat the analysis or review.                                                             |
| No feasible fibre route   | Check continuous cores, ports, optical budget and route diversity. Do not fabricate capacity.                                     |
| Inspection stays queued   | Reconnect and authenticate. Review server errors and asset revision conflicts.                                                    |
| Permission denied         | Confirm the signed-in role and hand the action to its authorised owner.                                                           |
| Enquiry failed            | Check required fields and consent. Respect rate limits; no success reference means no confirmed submission.                       |

## Support evidence

Provide the module, asset/record ID, time, intended action and visible error. Remove passwords, service keys and personal data from screenshots or messages.

# Pilot acceptance and reference

A useful pilot proves that the right team can complete representative work on a verified dataset and recover the resulting records.

## Acceptance exercise

1. Select an operating area and reconcile the surveyed register with the utility owner. Confirm equipment IDs, connections, units, lifecycle and essential dependencies.
2. Run representative traces for every included utility. Have the relevant engineer review screening assumptions and edge cases.
3. Assess a disruption, prepare a draft extension, allocate a fibre service where applicable and complete a field work cycle with synchronized evidence.
4. Demonstrate stale-revision handling, invalid import rollback, role restrictions and outbox conflict review.
5. Back up and restore to a separate environment. Agree monitoring, retention, recovery objectives and escalation ownership.
6. Record the accepted scope, unresolved limitations and the decision owner before operational adoption.

## Release scope

The product includes seven utility domains, ten modules and four role-specific guidance paths. Demonstration assets and workflow examples make the work cycle explorable. Mappls provides maps, reverse geocoding and navigation context.

mGIS, InTouch, Workmate, billing, ERP and telemetry connections require licensed tenant access and agreed data contracts. Full specialised solvers, enterprise identity, high availability and production-scale performance are separate acceptance items.

## Basis and references

This guide describes the implemented Mappls Utility Platform release 0.5 and its interface labels, validation rules and engineering assumptions. The product's inline guidance and exported results should be checked against the current deployed version.

Engineering assumptions, data models, deployment and test evidence are maintained in the private project repository: <https://gitlab.mapmyindia.com/rohan/mappls-utility-gis>

Public product resources: /about and /guide. The enquiry privacy notice is available at /privacy.